

1. An acoustic transducer that converts a mechanical motion into acoustical energy comprising:

a thin sheet diaphragm that is curved in a plane transverse to a first direction,

a support that fixes one generally linear portion of said diaphragm along said first direction, and

at least one actuator operatively coupled to said diaphragm and generally aligned with, but mutually spaced from said fixed generally linear portion in a second direction transverse to said first direction by a distance that produces a curvature of said diaphragm and that accommodates a movement of said diaphragm that corresponds to the travel of said actuator, said diaphragm movement being amplified with respect to said actuator travel and generally transverse to the direction of said actuator travel.
2. The acoustic transducer of claim 1 wherein said at least one actuator is characterized by a high force and short linear travel.
3. The acoustic transducer of claim 1 wherein said at least one actuator is a piezo actuator.
4. The acoustic transducer of claim 1 wherein said curvature is generally parabolic.
5. The acoustic transducer of claim 2 further comprising a seal at at least a portion of the periphery of said diaphragm to assist in maintaining the acoustic pressure gradient across said transducer.

12. The acoustic transducer of claim 11 wherein said drive circuit comprises an active filter and an amplifier.

13. The acoustic transducer of claim 12 wherein said drive circuit further comprises a step-up transformer and a resistor connected in series with said transformer to control high frequency response.

14. The acoustic transducer of claim 12 wherein said drive circuit drives said actuator to control operation at a main resonance in the transducer output.

FIG. 10 is a block diagram of the acoustic transducer of claim 11.